ABSTRACT
        In fall 1992, a study was conducted at the Eastern
Campus of Cuyahoga Community College, in Ohio, to gather data on
student performance in the developmental English program and propose
appropriate rates of academic progress for different groupings of
students. Academic records were analyzed for all 877 students
enrolled in developmental English courses (i.e., English 097, 098,
099) and English 101 during fall 1988, recording each student's sex,
race, age, English course enrolled in fall 1988, entry English course
placement, time of class offering, highest level English course
successfully completed by spring 1991, English course grades, overall
grade point average (GPA), number of credit hours completed by fall
1992, and persistence rates. Study findings included the following:
(1) females outnumbered males 567 to 310, the mean age was 24.956
years, and nonwhites exceeded whites 511 to 366; (2) two-thirds of
the sample (n=581) had placed into developmental English courses; (3)
academic success in terms of GPA was found to be related to English
course placement, as students placing into English 097 had an overall
GPA of 1.625, compared to 2.372 for those placing into 101; and (4)
differences in overall GPA were also found for age, race, and sex,
with older white females showing the highest rates of success and
younger nonwhite males showing the lowest. Based on findings, it was
recommended that these findings be used by faculty and administrators
to determine standards of program excellence until further student
performance studies can be conducted. Forty-eight data tables are
appended. (KP)

Faculty Scholarship Report

An Analysis of Student Performance in the Eastern Campus Developmental English Program

submitted by

Donald T. Jelfo, Associate Professor
History and Political Science

September 6, 1992

BEST COPY AVAILABLE

I.   Statement of Purposes.

The purposes of this study were to (1) conduct an analysis of student performance in the developmental English program at the Eastern Campus of Cuyahoga Community College and (2) to propose appropriate and reasonable rates of academic progress for different groupings of students.

II.   History of Problem.

Since its inception, Cuyahoga Community College has operated as an open-door admissions institution of higher education. The diversity of its student body in terms of academic ability and academic preparation has caused the College to develop and offer special curricular programs and support services to promote student success. In particular, the College has developed a sequence of courses in area of English composition that prepare a student for college level English. At various times in the College's history these courses have been labeled as "remedial", "basic", "compensatory", or "developmental". During the first two decades of the College's history the courses were offered under the numbers of 091,092,093 (a composition sequence) and 095, 096 (a reading improvement sequence). The goals of this program were and continue to be to prepare any student for college-level English and to teach the requisit verbal and writing skills necessary for college work in other academic disciplines.

In an attempt to address a number of problems with these courses, the faculty and administration, with the support of Title III funding, in 1983 replaced these sequences with a single three-course sequence of English 097,098,099. Each of these courses is (1) six credit hours, (2) attempts to integrate writing with reading improvement instruction and (3) is structured to provide a learning path of increasing complexity and skill level. An assessment instrument was selected to place students into one of the three courses that matched the students level of preparation.

To date, no formal evaluation or analysis of the developmental English program has been conducted using longitudinal data. This is not unusual in postsecondary institutions with developmental programs. It has been nine years since the implementation of the revised program. It is appropriate to ask how effective the program is. The basic question that must be addressed is does the

developmental program actually prepare students for college-level English and for success in other academic areas. For example, does a student with 098 entry skills have a "good" chance of completing English 101 and making steady progress toward completion of his academic program?

III. Research Questions and Procedures

The following questions were addressed:

1. What level of success did students achieve in their English courses?
2. What is the relationship between level of achievement and original course placement? Do students originally placed in English 101 achieve at a higher rate than those originally placed in 099? or 098? or 097?
3. Were there significant differences in student achievement when students are sorted according to race, age, sex, time of class?
4. Of those students originally placed in English 097, how many completed English 098 by the end of Spring 1991? how many completed 099? how many completed 101?
5. Of those students originally placed in English 098, how many completed English 099 by the end of Spring 1991? how many completed 101?
6. Of those students originally placed in English 099, how many completed English 101 by the end of Spring 1991?
7. Did students enrolled in English 097, 098,099, and 101 differ in total number of credit hours earned in the three year period when sorted by sex, race, and age? For example, did older, nonwhite, female students originally enrolled in English 098 achieve at a higher rate than older, white, males enrolled in English 098?

The research sample population consisted of all students enrolled in English 097, 098, 099, and 101 at the Eastern Campus during the Fall, 1988 academic quarter. Academic records of these students (a total of 877) through the period of Spring, 1991 (i.e. three years) were used. Data was collected according to the following list of variables: sex, race, age, number of English course enrolled in Fall 1988, entry English course placement, time of class offering (day vs. evening/weekend), highest level of English course successfully completed, grade in each English course, overall grade point average, number of credit hours completed by the end of Fall Quarter, 1992, and persistence.

In the hypotheses tested the age, time of class attendance, sex, race, and original English course placement were the independent variables. The academic performance measures of overall grade point average, English course grade point average, total credit hours earned by the end of Fall Quarter, 1991, persistence, and the number of developmental students completing English 101 and 102 were the dependent variables. For the purpose of this study, persistence was defined as the number of quarters after Fall, 1988 that a student registered for a class. Statistical tests were done on a Macintosh II computer utilizing the Systat program.

The study has a number of limitations. First, its findings may be applicable to only the Eastern Campus of Cuyahoga College. Second, the study did not attempt a comprehensive analysis that would examine all components of the developmental program. No attempt, for example, to obtain data on the tutorial services provided by the Campus Learning Center. The focus of the study was on quantifiable student performance. Third, no effort was made to gather data on student and staff affective reactions to the program.

IV. Results and Discussion.

Utilizing Systat, frequencies, means, and standard deviations were computed for overall grade point average, overall and individual English course grade point average, persistence, and total credit courses earned of selected groupings and subgroupings of the sample population. Age was listed in order of increasing number of years and divided into two groups at the mean.

As listed in Tables 1 and 2, the sample had the following characteristics: females outnumbered males 567 to 310, the mean age was 24.956 years with 601 students aged 25 or less and 276 students over 25, the number of nonwhites (511) exceeded the number of whites (366), and the number of day students (594) was much larger than the number of evening and weekend student (283). Only 296 (33.25%) or about one-third of the sample had placed into English 101; 197 (22.46%) placed into English 097; 213 (24.29%) placed into English 098, and 171 (19.5%) placed into English 099. Thus, two-thirds of the sample population placed into developmental English courses.

TOTAL SAMPLE OVERALL STATISTICS	
AVERAGE AGE	24.956
OVERALL GPA	2.059
TOTAL AVERAGE CREDIT HOURS EARNED	42.507
GPA IN ENGLISH COURSES	2.176
PERSISTENCE	6.567
MEAN GRADE IN 097	2.441
MEAN GRADE IN 098	2.394
MEAN GRADE IN 099	2.298
MEAN GRADE IN 101	2.122
MEAN GRADE IN 102	2.226

TABLE 1.   Total Sample Overall Student Performance

COMPOSITION OF SAMPLE		
SEX	MALES	310
	FEMALES	567
AGE	0-25	601
	OVER 25	276
RACE	WHITES	366
	NONWHITES	511
TIME	DAY	594
	EVEN/WKND	283
PLACEMENT	097	197 (22.46%)
	098	213 (24.29%)
	099	171 (19.5%)
	101	296 (33.25%)

TABLE 2.   Composition of Sample

For the question of level of student success in English courses it was found that the mean grade did not differ significantly from one

course course to another. The range of mean grade scores in the developmental courses was from 2.298 to 2.441, and from 2.122 to 2.226 in the two college level courses examined.

For the relationship between level of achievement and original course placement there were a number of interesting findings. These are reported in Table 3. Generally, the higher one placed in the English sequence, the more likely one was to achieve academic success. Students placed into English 097 had an overall GPA of 1.625 by Fall,1991, whereas those placed into English 101 had an overall GPA of 2.372. The English 097 group appeared to be particularly at risk, whether compared to those placed into English 101, English 099 or English 098. On the other hand, differences in academic performance between students placed in English 098 and 099 were quite small. And differences between these groups and the English 101 group in total credit hours earned, English GPA and persistence were small.

Using the analysis of variance test, significant differences were found for overall grade point average (.01 level), English course GPA (.01 level) , and persistence (.05 level) in relation to English course placement. No significant difference was found for the measure of total credit hours earned. Calculations of all statistical tests that resulted in findings of significance are presented in the Appendix of this report.

ACADEMIC PERFORMANCE AND ENGLISH COURSE PLACEMENT			
	Placed into Eng. 097	Placed into Eng. 098	Placed into Eng. 099	Placed into Eng.101
Overall GPA	1.625	2.023	2.062	2.372
Total Credit Hrs. Earned	38.201	42.333	41.766	45.926
English GPA	1.925	2.204	2.222	2.297
Persistence	5.665	7.455	6.269	6.702

TABLE 3. Academic Performance and English Course Placement.

For the relationship of race and academic performance significant differences were found for overall grade point average (.01 level), overall English course grade point average (.01 level), and mean grade in each English course (at the .05 level for 097 and at the .01

level for English 098,099,101,102). The differences in overall GPA were quite large, with mean scores of 2.430 for whites and 1.794 for nonwhites. Even within individual English courses, which because of the placement system should have produced groups that were relatively homogeneous in terms of ability, the differences were large. In each case, whites, as a group, earned significantly higher grades than nonwhites. On the other hand, differences in persistence and total credit hours earned were not statistically significant. This data is presented in Table 4.

Another interesting finding related to the variable of race is the percentage of whites and nonwhites placed into English 101 vs. developmental courses. Whereas 52.73% of white students place into English 101, only 20.16% of nonwhites do so. At the other extreme, only 7.92% of whites place into English 097, but 32.98% of nonwhites do so (see Table 5).

RACE and ACADEMIC PERFORMANCE		
	WHITES	NONWHITES
Overall GPA	2.430	1.794
Total Credit Hrs. Earned	45.085	40.660
English GPA	2.487	1.959
Persistence	6.380	6.702
097 Mean Grade	2.870	2.377
098 Mean Grade	2.705	2.296
099 Mean Grade	2.787	2.063
101 Mean Grade	2.411	1.869
102 Mean Grade	2.642	1.821

TABLE 4. Race and Academic Performance

ENGLISH COURSE PLACEMENT AND RACE				
	Placed into 097	Placed into 098	Placed into 099	Placed into 101
Whites	29 (7.92%)	67 (18.31%)	77 (21.04%)	193 (52.73%)
Nonwhites	168 (32.88%)	146 (28.57%)	94 (18.40%)	103 (20.16%)

TABLE 5. English Course Placement and Race.

For the relationship of age and academic performance, significant differences (at the .01 level for all except persistence which was at the .05 level) were found for every performance measure. Again the differences were quite large, reaching nearly a full letter grade in English 102, and in each case "older" students, defined as those over 25, earned significantly higher scores. This data is presented in Table 6.

AGE AND ACADEMIC PERFORMANCE		
	0-25	OVER 25
Overall GPA	1.863	2.486
Total Credit Hrs. Earned	37.420	53.583
English GPA	1.980	2.613
Persistence	6.275	7.203
097 Mean Grade	2.266	2.721
098 Mean Grade	2.281	2.635
099 Mean Grade	2.139	2.650
101 Mean Grade	1.948	2.503
102 Mean Grade	1.904	2.828

TABLE 6. Age and Academic Performance.

For the relationship of sex and academic performance, significant differences were found in six of the nine performance measures (overall grade point average, total credit hours earned, persistence

and mean grade in English 101 at the .05 level, and English course grade point average and mean grade in English 098 at the .01 level). In each case the performance of female students was higher than that of males. The differences, however, did not appear to be as large as those for the variables of race and age. This data is presented in Table 7.

SEX AND ACADEMIC PERFORMANCE		
	MALES	FEMALES
Overall GPA	1.951	2.118
Total Credit Hrs. Earned	38.153	44.887
English GPA	1.981	2.283
Persistence	5.890	6.938
097 Mean Grade	2.354	2.491
098 Mean Grade	2.169	2.532
099 Mean Grade	2.202	2.345
101 Mean Grade	1.961	2.201
102 Mean Grade	2.109	2.278

TABLE 7. Sex and Academic Performance.

For the relationship of time of class and academic performance, significant differences were found in overall grade point average (.05 level), total credit hours earned (.05 level), overall English course grade point average (.01 level), mean grade in English 098 and 102 (.05 level). In each case the higher scores were earned by the evening/weekend students. Again, even when significant differences were found they did not appear to be as large as for the variables of age and race. Although differences in mean grade in English 097, 099, and 101 also favored the evening/weekend students, they were not significant. This data is presented in Table 8.

TIME AND ACADEMIC PERFORMANCE		
	DAY	EVEN/WKND
Overall GPA	2.001	2.182
Total Credit Hrs. Earned	44.373	38.590
English GPA	2.108	2.321
Persistence	6.668	6.357
097 Mean Grade	2.302	2.414
098 Mean Grade	2.268	2.592
099 Mean Grade	2.202	2.375
101 Mean Grade	2.101	2.167
102 Mean Grade	2.022	2.698

TABLE 8. Time and Academic Performance.

The data related to the question of English course placement and completion of subsequent English course is presented in Table 9. As expected, the higher a student is placed in the English sequence, the more likely the student will complete English 101 and 102. For example, of the 197 students placed into English 097 , 59.39% completed English 098, 45.68% completed English 099, 41.12% completed English 101, and 20.81% completed English 102. The percentage of those completing a course declines as the level of course increases. Apparently the each succeeding higher level course acts as a kind of hurdle or filter. A similar pattern was found for those placing into the other English courses. Of the 213 students placed into English 098 , 57.28 % completed English 099, 61.50% completed English 101, and 37.09 % completed English 102. Of the 171 students who placed into English 099, 71.93 % completed English 101, and 49.71 % completed English 102. Overall, of the 581 students who placed into developmental English courses, 335 or 57.66% completed English 101.

To those not familiar with the unique problems of many students placed at this level in the developmental sequence, this level of suci ess may not appear to be high. An argument could be made that the students entering developmental courses should be able to "catch up" to higher placed students as a result of the instruction they receive in developmental courses. As a consequence of developmental course instruction they should be able to compete on even terms with students placed directly into English 101. This

argument, however, is not convincing to those more experienced with developmental students. A great deal of persistence and determination is required from a student to advance through three six credit courses and to acquire the skills needed to compete in college level English course. It is interesting to note that even within the group that placed directly into English 101, only 60.81% completed English 102, the next course in the college level English sequence. That is remarkably close to the number of 097 student completing 098 (59.39%), the number of entering 098 students who complete 099 (57.28%), and the number of entering 099 students who complete 101 (71.93%).

Also found were differences in English course grade between those who placed directly into a course and those who placed into a lower level English course and who had completed the prerequisite. For example, students placed directly into English 101 earned higher grades on the average than those who had to complete English 097, 098, or 099 prior to registering for English 101. Significant differences between groups based on placement were found for mean course grade in English 098, 101, and 102 (all at the .01 level). Interestingly, the differences in performance in English 099 between those who placed directly into that course versus those who placed into English 097 or 098 favored the 099 placements but were not significant.

For the relationship of academic performance with respect to race and sex, significant differences were found for overall grade point average (.01 level), total credit hours earned (.05 level), overall English course grade point average (.01 level), and mean grade score in English 098, 099, 101, and 102 (.01 level). Differences in persistence and mean grade score in English 097 but were not found to be significant. In general, the rank order of higher performance was as follows: white females, white males, nonwhite females, nonwhite males. This data is presented in Table 10.

ENGLISH COURSE PLACEMENT AND COMPLETION OF SUBSEQUENT ENGLISH COURSES				
	Placed into 097	Placed into 098	Placed into 099	Placed into 101
Number of Students	197	213	171	296
# Complete Eng. 097	176 (89.34%)	-	-	-
Mean Grade in 097	2.432	-	-	-
# Complete Eng. 098	117 (59.39%)	200 (93.90%)	-	-
Mean Grade in 098	1.855	2.680	-	-
# Complete Eng. 099	90 (45.68%)	122 (57.28%)	163 (95.32%)	-
Mean Grade in 099	1.956	2.164	2.589	-
# Complete Eng. 101	81 (41.12%)	131 (61.50%)	123 (71.93%)	281 (94.93%)
Mean Grade in 101	1.531	1.817	2.187	2.406
# Complete Eng. 102	41 (20.81%)	79 (37.09%)	85 (49.71%)	180 (60.81%)
Mean Grade in 102	1.902	1.949	1.976	2.539

TABLE 9. English Course Placement and Completion of Subsequent English Courses.

13

ADADEMIC PERFORMANCE VS RACE AND SEX			
	White males (158)	Nonwhite males (152)	White Female(208)	Nonwhite Female(359)
Overall GPA	2.264	1.625	2.555	1.865
Total Credit Hours Earned	39.747	36.497	49.139	42.423
English GPA	2.229	1.732	2.680	2.056
Persistence	5.608	6.184	6.966	6.922
097 Mean Grade	2.818	2.259	2.917	2.440
# Complete Eng. 097	11	54	12	100
098 Mean Grade	2.538	2.000	2.872	2.451
# Complete Eng. 098	39	85	39	162
099 Mean Grade	2.696	1.794	2.864	2.161
# Complete Eng. 099	56	68	66	186
101 Mean Grade	2.259	1.563	2.515	1.979
# Complete Eng. 101	116	87	171	242
102 Mean Grade	2.282	1.854	2.857	1.810
# Complete Eng. 102	71	48	119	147

TABLE 10. Academic Performance and Race and Sex.

For the relationship of academic performance with respect to race, sex, and age significant differences were found for overall grade point average (.01 level), total credit hours earned (.01 level), overall English course grade point average (.01 level), and mean grade score in English 097, 098, 099, 101, and 102. (all at the .01 level) The addition of the variable of age to the previous research question resulted in finding one additional performance measure (mean grade in English 097) difference to be significant. Differences in persistence but were not found to be significant. In general, the

rank order of higher performance was as follows: 1)older, white females, 2) older, white males, 3) young,white females, 4) older, nonwhite females, 5) older, nonwhite males, 6) younger, white males, 7) younger, nonwhite females, 8) younger, nonwhite males. This data is presented in Table 11.

V. Recommendations and Impact of the Study.

The major purpose of this study was to analyze student performance in the developmental English course sequence at the Eastern Campus of Cuyahoga Community College. Prior to this study no analysis or formal evaluation of that program had been conducted. In addition, no attempt had been made to define criteria for program evaluation or to establish measurable standards of success. This may appear to be surprising for an institution that has, during recent years, touted its commitment to "excellence" and "high quality instruction" and prided itself on being "student-centered" . The literature on developmental education programs, however, describes that this lack of systematic program evaluation is the norm rather than the exception. This study is a first and, hopefully, significant step in the direction establishing a program evaluation model and procedure.

The findings of this study indicate that large numbers of developmental students are acquiring the skills and knowledge to succeed in college-level English courses. Although the data can be interpreted in several ways, experienced teachers and administrators of developmental programs, this writer suspects, will find the results encouraging. The rates of student success, however, differed significantly in relation to the variables of race, sex, age, time of the class, and English course placement. The developmental education sequence, in other words, is not of equal benefit to all students in the program.

On the basis of the findings described in this report, the following recommendations appear to be in order.

1. The study should be replicated on the Metropolitan and Western Campuses in the near future. In addition, an evaluation cycle should be established that would mandate repetition of this or a similar study on a regular basis, perhaps every five years. Neighboring two-year institutions should also be encouraged to conduct similar studies. It would be important to learn if programs

STUDENT ACADEMIC PERFORMANCE BY AGE, SEX AND RACE

	WM 0-25 (123)	NW,M,0-25 (116)	WF, 0-25 (126)	NW,F,0-25 (359)	OV25,WM (35)	OV25,NW M (36)	OV25,WF (82)	OV25,NWF (123)
Overall GPA	2.088	1.464	2.292	1.714	2.883	2.146	2.960	2.155
Total Credit Hours Earned	36.829	31.470	41.754	38339	50.000	52.694	60.488	50.260
English GPA	2.041	1.541	2.426	1.931	2.952	2.360	3.078	2.297
Persistence	5.374	6.155	6.397	6.740	6.429	6.278	7.841	7.268
097 Mean Grade	2.286	2.026	2.500	2.404	3.750	2.867	3.333	2.488
098 Mean Grade	2.469	1.844	2.708	2.396	2.857	2.476	3.133	2.541
099 Mean Grade	2.550	1.673	2.667	2.016	3.063	2.105	3.208	2.483
101 Mean Grade	2.098	1.403	2.275	1.883	2.875	2.100	2.870	2.175
102 Mean Grade	1.981	1.588	2.455	1.606	3.105	2.500	3.358	2.229

TABLE 11. Academic Performance and Race, Sex, and Age

17

at other institutions are achieving higher or lower levels of success. Strong or successful programs could then be studied for the purpose of identifying elements or program components that contribute to higher success rates.

2. Faculty and appropriate administrators should determine standards of program excellence for the developmental English program that are based on student performance data. Until that is completed, the rates of success described above might be appropriate to use as the program goal or standard.

3. The design of this study did not permit an analysis of the whole developmental program. In particular, the effects of tutorial services on the Campus Learning Center were not examined. In the near future an evaluation design should be developed to include all suspected significant components of program services.

4. Other departments in the Arts and Sciences should consider developing a design similar to the one utilized in this study to determine their level and standard of success and productivity.

5. Clearly, students who are female,white, older, and who take their courses during the evening/weekend have higher rates of success even in classes that are fairly homogeneous in terms of skill level. English faculty need to examine why that is so. They, perhaps, need to become more aware of which of their student are likely to encounter difficulty in their courses and design the proper early interventions that will assist these students. It is clear from the data compiled for this study that nonwhite, male, young, day students are at risk and that this developmental program is not having great success with that population.

APPENDIX

Table 1

CALCULATION OF F-RATIO FOR OVERALL GRADE POINT AVERAGE WITH RESPECT TO ENGLISH COURSE PLACEMENT

Source	Sum of Squares	DF	Mean Square	F
Between Groups	66.490	3	22.163	5.280*
Within Groups	837.187	873	.959	

* Significant at the .01 level.

Table 2

CALCULATION OF F-RATIO FOR ENGLISH GRADE POINT AVERAGE WITH RESPECT TO ENGLISH COURSE PLACEMENT

Source	Sum of Squares	DF	Mean Square	F
Between Groups	16.633	3	5.544	5.021*
Within Groups	935.364.	847	1.104.	

Significant at the .01 level.

Table 3

CALCULATION OF F-RATIO FOR PERSISTANCE WITH RESPECT TO ENGLISH COURSE PLACEMENT

Source	Sum of Squares	DF	Mean Square	F
Between Groups	348.937	3	116.312	3.248*
Within Groups	31224.089	872	35.807	

Significant at the .05 level.

Table 4

CALCULATION OF F-RATIO FOR ENGLISH 098 MEAN GRADE POINT
AVERAGE WITH RESPECT TO ENGLISH COURSE PLACEMENT

Source	Sum of Squares	DF	Mean Square	F
Between Groups	55.038	3	18.346	16.799*
Within Groups	350.550	321	1.092	

Significant at the .01 level.

Table 5

CALCULATION OF F-RATIO FOR ENGLISH 101 MEAN GRADE POINT
AVERAGE WITH RESPECT TO ENGLISH COURSE PLACEMENT

Source	Sum of Squares	DF	Mean Square	F
Between Groups	65.643	3	21.214	17.168*
Within Groups	756.226	612	1.236	

Significant at the .01 level.

Table 6

CALCULATION OF F-RATIO FOR ENGLISH 102 MEAN GRADE POINT
AVERAGE WITH RESPECT TO ENGLISH COURSE PLACEMENT

Source	Sum of Squares	DF	Mean Square	F
Between Groups	33.252	3	11.084	6.398*
Within Groups	660.088	381	1.733	

Significant at the .05 level.

Table 7

CALCULATION OF t-RATIO FOR OVERALL GRADE POINT AVERAGE WITH RESPECT TO RACE

	Whites	Nonwhites
n	366	511
Mean	2.430	1.794
S.D. =	1.044	.907

Overall Mean = 2.059   S.D. = 1.016
Pooled Within Groups S.D. = 1.016
t-ratio = 9.609 *

*Significant at .01 level

Table 8

CALCULATION OF t-RATIO FOR OVERALL ENGLISH COURSES GRADE POINT AVERAGE WITH RESPECT TO RACE

	Whites	Nonwhites
n	350	501
Mean	2.487	1.959
S.D. =	1.072	.993

Overall Mean = 2.176   S.D. = 1.058
Pooled Within Groups S.D. = 1.058
t-ratio = 7.385 *

*Significant at .01 level

Table 9

CALCULATION OF t-RATIO FOR ENGLISH 097 MEAN GRADE POINT AVERAGE WITH RESPECT TO RACE

	Whites	Nonwhites
n	23	154
Mean	2.870	2.377
S.D. =	1.014	1.067

Overall Mean = 2.441   S.D. = 1.070
Pooled Within Groups S.D. = 1.070
t-ratio = 2.080 *

*Significant at .05 level

Table 10

CALCULATION OF t-RATIO FOR ENGLISH 098 MEAN GRADE POINT
AVERAGE WITH RESPECT TO RACE

	Whites	Nonwhites
n	78	247
Mean	2.705	2.296
S.D. =	.913	1.161

Overall Mean = 2.394   S.D. = 1.119
Pooled Within Groups S.D. = 1.119
t-ratio = 2.849 *

*Significant at .01 level

Table 11

CALCULATION OF t-RATIO FOR ENGLISH 099 MEAN GRADE POINT
AVERAGE WITH RESPECT TO RACE

	Whites	Nonwhites
n	122	254
Mean	2.787	2.063
S.D. =	1.022	1.054

Overall Mean = 2.298   S.D. = 1.096
Pooled Within Groups S.D. = 1.096
t-ratio = 6.296 *

*Significant at .01 level

Table 12

CALCULATION OF t-RATIO FOR ENGLISH 101 MEAN GRADE POINT
AVERAGE WITH RESPECT TO RACE

	Whites	Nonwhites
n	287	329
Mean	2.411	1.869
S.D. =	1.185	1.067

Overall Mean = 2.122   S.D. = 1.155
Pooled Within Groups S.D. = 1.155
t-ratio = 5.972 *

*Significant at .01 level

23

Table 13

CALCULATION OF t-RATIO FOR ENGLISH 102 MEAN GRADE POINT
AVERAGE WITH RESPECT TO RACE

	Whites	Nonwhites
n	366	195
Mean	2.642	1.821
S.D. =	1.276	1.286

Overall Mean = 2.226   S.D. = 1.344
Pooled Within Groups S.D. = 1.344
t-ratio = 6.292 *

*Significant at .01 level

Table 14

CALCULATION OF t-RATIO FOR OVERALL GRADE POINT AVERAGE WITH
RESPECT TO AGE

	Young (0-25)	Older (over 25)
n	601	276
Mean	1.863	2.486
S.D. =	.952	1.022

Overall Mean = 2.059   S.D. = 1.016
Pooled Within Groups S.D. = 1.016
t-ratio = 8.784 *

*Significant at .01 level

Table 15

CALCULATION OF t-RATIO FOR TOTAL CREDIT HOURS EARNED MEANS
WITH RESPECT TO AGE

	Young (0-25)	Older (over 25)
n	601	276
Mean	37.420	53.583
S.D. =	33.624	43.289

Overall Mean = 42.507   S.D. = 37.670
Pooled Within Groups S.D. = 37.670
t-ratio = 6.018*

*Significant at .01 level

24

Table 16

CALCULATION OF t-RATIO FOR OVERALL ENGLISH COURSES GRADE POINT AVERAGE WITH RESPECT TO AGE

	Young (0-25)	Older (over 25)
n	587	264
Mean	1.980	2.613
S.D. =	1.019	1.015

Overall Mean = 2.176   S.D. = 1.058
Pooled Within Groups S.D. = 1.058
t-ratio = 8.394 *

*Significant at .01 level

Table 17

CALCULATION OF t-RATIO FOR PERSISTANCE WITH RESPECT TO AGE

	Young (0-25)	Older (over 25)
n	600	276
Mean	6.275	7.203
S.D. =	4.523	8.346

Overall Mean = 6.567   S.D. = 6.007
Pooled Within Groups S.D. = 6.007
t-ratio = 2.128 *

*Significant at .05

Table 18

CALCULATION OF t-RATIO FOR ENGLISH 097 GRADE POINT AVERAGE WITH RESPECT TO AGE

	Young (0-25)	Older (over 25)
n	109	68
Mean	2.266	2.721
S.D. =	1.086	0.990

Overall Mean = 2.441   S.D. = 1.070
Pooled Within Groups S.D. = 2.441
t-ratio = 2.801*

*Significant at .01 level

Table 19

CALCULATION OF t-RATIO FOR ENGLISH 098 GRADE POINT AVERAGE
WITH RESPECT TO AGE

	Young (0-25)	Older (over 25)
n	221	104
Mean	2.281	2.635
S.D. =	1.097	1.133

Overall Mean = 2.394   S.D. = 1.119
Pooled Within Groups S.D. = 1.119
t-ratio = 2.687 *

*Significant at .01 level

Table 20

CALCULATION OF t-RATIO FOR ENGLISH 099 GRADE POINT AVERAGE
WITH RESPECT TO AGE

	Young (0-25)	Older (over 25)
n	259	117
Mean	2.139	2.650
S.D. =	1.098	1.011

Overall Mean = 2.298   S.D. = 1.096
Pooled Within Groups S.D. = 1.096
t-ratio = 4.277 *

*Significant at .01 level

Table 21

CALCULATION OF t-RATIO FOR ENGLISH 101 GRADE POINT AVERAGE
WITH RESPECT TO AGE

	Young (0-25)	Older (over 25)
n	423	193
Mean	1.948	2.503
S.D. =	1.143	1.090

Overall Mean = 2.122   S.D. = 1.155
Pooled Within Groups S.D. = 1.155
t-ratio = 5.668 *

*Significant at .01 level

26

Table 22

CALCULATION OF t-RATIO FOR ENGLISH 102 GRADE POINT AVERAGE
WITH RESPECT TO AGE

	Young (0-25)	Older (over 25)
n	251	134
Mean	1.904	2.828
S.D. =	1.305	1.205

Overall Mean = 2.226   S.D. = 1.344
Pooled Within Groups S.D. = 1.344
t-ratio = 6.795 *

*Significant at .01 level

Table 23

CALCULATION OF t-RATIO FOR OVERALL GRADE POINT AVERAGE WITH
RESPECT TO SEX

	Males	Females
n	310	567
Mean	1.951	2.118
S.D. =	1.061	.986

Overall Mean = 2.059   S.D. = 1.016
Pooled Within Groups S.D. = 1.016
t-ratio = 2.334 *

*Significant at .05 level

Table 24

CALCULATION OF t-RATIO FOR TOTAL CREDIT HOURS EARNED WITH
RESPECT TO SEX

	Males	Females
n	310	567
Mean	38.153	44.887
S.D. =	35.815	38.470

Overall Mean = 42.507   S.D. = 37.670
Pooled Within Groups S.D. = 37.670
t-ratio = 2.539 *

*Significant at .05 level

27

Table 25

CALCULATION OF t-RATIO FOR OVERALL ENGLISH COURSES MEAN
GRADE POINT AVERAGE WITH RESPECT TO SEX

	Males	Females
n	300	551
Mean	1.981	2.283
S.D. =	1.121	1.008

Overall Mean = 2.176   S.D. = 1.058
Pooled Within Groups S.D. = 1.058
t-ratio = 4.012 *

*Significant at .01 level

Table 26

CALCULATION OF t-RATIO FOR PERSISTANCE WITH RESPECT TO SEX

	Males	Females
n	310	567
Mean	5.890	6.938
S.D. =	4.468	6.676

Overall Mean = 6.567   S.D. = 6.007
Pooled Within Groups S.D. = 6.007
t-ratio = 2.476 *

*Significant at .05 level

Table 27

CALCULATION OF t-RATIO FOR ENGLISH 098 MEAN GRADE POINT
AVERAGE WITH RESPECT TO SEX

	Males	Females
n	124	201
Mean	2.169	2.532
S.D. =	1.241	1.015

Overall Mean = 2.394   S.D. = 1.119
Pooled Within Groups S.D. = 1.119
t-ratio = 2.873*

*Significant at .01 level

Table 28

CALCULATION OF t-RATIO FOR ENGLISH 101 MEAN GRADE POINT
AVERAGE WITH RESPECT TO SEX

	Males	Females
n	203	413
Mean	1.961	2.201
S.D. =	1.218	1.115

Overall Mean = 2.122   S.D. = 1.155
Pooled Within Groups S.D. = 1.155
t-ratio = 2.439 *

*Significant at .05 level

Table 29

CALCULATION OF t-RATIO FOR OVERALL GRADE POINT AVERAGE WITH
RESPECT TO TIME OF CLASS

	Day	Evening/Weekend
n	594	283
Mean	2.001	2.182
S.D. =	1.002	1.035

Overall Mean = 2.059   S.D. = 1.016
Pooled Within Groups S.D. = 1.016
t-ratio = 2.477 *

*Significant at .05 level

Table 30

CALCULATION OF t-RATIO FOR TOTAL CREDIT HOURS EARNED WITH
RESPECT TO TIME OF CLASS

	Day	Evening/Weekend
n	594	283
Mean	44.373	38.590
S.D. =	37.947	35.842

Overall Mean = 42.507   S.D. = 37.670
Pooled Within Groups S.D. = 37.670
t-ratio = 2.130 *

*Significant at .05 level

Table 31

CALCULATION OF t-RATIO FOR OVERALL ENGLISH COURSES GRADE
POINT AVERAGE WITH RESPECT TO TIME OF CLASS

	Day	Evening/Weekend
n	577	274
Mean	2.108	2.321
S.D. =	1.035	1.094

Overall Mean = 2.176   S.D. = 1.058
Pooled Within Groups S.D. = 1.058
t-ratio = 2.757 *

*Significant at .01 level

Table 32

CALCULATION OF t-RATIO FOR ENGLISH 098 MEAN GRADE POINT
AVERAGE WITH RESPECT TO TIME OF CLASS

	Day	Evening/Weekend
n	222	103
Mean	2.302	2.592
S.D. =	1.107	1.124

Overall Mean = 2.394   S.D. = 1.119
Pooled Within Groups S.D. = 1.119
t-ratio = 2.190 *

*Significant at .05 level

Table 33

CALCULATION OF t-RATIO FOR ENGLISH 102 MEAN GRADE POINT
AVERAGE WITH RESPECT TO TIME OF CLASS

	Day	Evening/Weekend
n	269	116
Mean	2.022	2.698
S.D. =	1.264	1.409

Overall Mean = 2.226   S.D. = 1.134
Pooled Within Groups S.D. = 1.134
t-ratio = 4.649 *

*Significant at .01 level

Table 34

CALCULATION OF F-RATIO FOR OVERALL GRADE POINT AVERAGE WITH
RESPECT TO RACE AND SEX

Source	Sum of Squares	DF	Mean Square	F
Between Groups	99.976	3	33.325	36.199*
Within Groups	803.700	873	.921	

* Significant at the .01 level.

Table 35

CALCULATION OF F-RATIO FOR TOTAL CREDIT HOURS EARNED WITH
RESPECT TO RACE AND SEX

Source	Sum of Squares	DF	Mean Square	F
Between Groups	15846.737	3	5282.246	3.758*
Within Groups	1227242.22	873	1405.776	

* Significant at the .05 level.

Table 36

CALCULATION OF F-RATIO FOR OVERALL ENGLISH COURSES GRADE
POINT AVERAGE WITH RESPECT TO RACE AND SEX

Source	Sum of Squares	DF	Mean Square	F
Between Groups	85.927	3	28.012	36.199*
Within Groups	866.070	847	1.023	

* Significant at the .01 level.

31

Table 37

CALCULATION OF F-RATIO FOR ENGLISH 098 GRADE POINT AVERAGE
WITH RESPECT TO RACE AND SEX

Source	Sum of Squares	DF	Mean Square	F
Between Groups	23.431	3	7.810	6.561*
Within Groups	382.156	321	1.191	

* Significant at the .01 level.

Table 38

CALCULATION OF F-RATIO FOR ENGLISH 099 GRADE POINT AVERAGE
WITH RESPECT TO RACE AND SEX

Source	Sum of Squares	DF	Mean Square	F
Between Groups	50.747	3	16.916	15.736*
Within Groups	399.891	372	1.075	

* Significant at the .01 level.

Table 39

CALCULATION OF F-RATIO FOR ENGLISH 101 GRADE POINT AVERAGE
WITH RESPECT TO RACE AND SEX

Source	Sum of Squares	DF	Mean Square	F
Between Groups	60.615	3	20205	16.286*
Within Groups	759.254	612	1.241	

* Significant at the .01 level.

Table 40

CALCULATION OF F-RATIO FOR ENGLISH 102 GRADE POINT AVERAGE
WITH RESPECT TO RACE AND SEX

Source	Sum of Squares	DF	Mean Square	F
Between Groups	79.757	3	26.586	16.508*
Within Groups	613.583	381	1.610	

* Significant at the .01 level.

Table 41

CALCULATION OF F-RATIO FOR OVERALL GRADE POINT AVERAGE WITH
RESPECT TO AGE, RACE AND SEX

Source	Sum of Squares	DF	Mean Square	F
Between Groups	167.964	7	23.995	28.342*
Within Groups	735.713	869	.847	

* Significant at the .01 level.

Table 42

CALCULATION OF F-RATIO FOR TOTAL CREDIT HOURS EARNED WITH
RESPECT TO AGE, RACE AND SEX

Source	Sum of Squares	DF	Mean Square	F
Between Groups	61873.844	7	8839.121	6.503*
Within Groups	1181215.11	869	1359.281	

* Significant at the .01 level.

33

Table 43

CALCULATION OF F-RATIO FOR OVERALL ENGLISH COURSES GRADE POINT AVERAGE WITH RESPECT TO AGE, RACE AND SEX

Source	Sum of Squares	DF	Mean Square	F
Between Groups	155.097	7	22.157	23.439*
Within Groups	796.900	843	.945	

* Significant at the .01 level.

. Table 44

CALCULATION OF F-RATIO FOR ENGLISH 097 GRADE POINT AVERAGE WITH RESPECT TO AGE, RACE AND SEX

Source	Sum of Squares	DF	Mean Square	F
Between Groups	21.444	7	3.063	2.873*
Within Groups	180.183	169	1.066	

* Significant at the .01 level.

Table 45

CALCULATION OF F-RATIO FOR OVERALL GRADE POINT AVERAGE WITH RESPECT TO AGE, RACE AND SEX

Source	Sum of Squares	DF	Mean Square	F
Between Groups	33.089	7	4.727	4.023*
Within Groups	372.499	317	1.175	

* Significant at the .01 level.

Table 46

CALCULATION OF F-RATIO FOR ENGLISH 099 GRADE POINT AVERAGE
WITH RESPECT TO AGE, RACE AND SEX

Source	Sum of Squares	DF	Mean Square	F
Between Groups	69.493	7	9.928	9.585*
Within Groups	381.146	368	1.036	

* Significant at the .01 level.

Table 47

CALCULATION OF F-RATIO FOR ENGLISH 101 GRADE POINT AVERAGE
WITH RESPECT TO AGE, RACE AND SEX

Source	Sum of Squares	DF	Mean Square	F
Between Groups	98.743	7	14.106	11.893*
Within Groups	721.125	608	1.186	

* Significant at the .01 level.

Table 48

CALCULATION OF F-RATIO FOR ENGLISH 102 GRADE POINT AVERAGE
WITH RESPECT TO AGE, RACE AND SEX

Source	Sum of Squares	DF	Mean Square	F
Between Groups	142.167	7	13.892	28.342*
Within Groups	551.173	377	1.462	

* Significant at the .01 level.